

AMENDMENTS TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A picture conversion apparatus that converts an inputted interlaced video signal into a progressive video signal, comprising:

an interpolation circuit that generates interpolated pixels between lines on the basis of said inputted interlaced video signal;

a motion calculation circuit that calculates motion amount information in [[the]] a vertical direction of a picture on [[the]] a basis of said interpolation signal outputted from said interpolation circuit;

a still picture processing circuit that generates a still picture progressive signal by still picture processing from said inputted interlaced video signal;

a moving picture processing circuit that generates a moving picture progressive signal by moving picture processing from said inputted interlaced video signal; and

an output circuit that outputs the still picture progressive signal outputted from said still picture processing circuit as said progressive video signal when said motion amount calculated by said motion calculation circuit is smaller than a first value, said interpolation circuit comprising:

an interlace generation circuit that generates a plurality of interlaced video signals respectively corresponding to a plurality of successive fields on the basis of said inputted interlaced video signal;

a first progressive generation circuit that generates a first progressive field signal on the basis of the plurality of interlaced video signals generated by said interlace generation circuit;

a second progressive generation circuit that generates a second progressive field signal on the basis of the plurality of interlaced video signals generated by said interlace generation circuit; and

an output circuit that outputs a progressive signal by changing, for each pixel, the ratio of an inter-frame interpolation signal to an intra-field interpolation signal, based on the motion amount information.

2. (Withdrawn) The picture conversion apparatus according to claim 1, wherein said interpolation circuit includes

an interlace generation circuit that generates a plurality of interlaced video signals respectively corresponding to a plurality of successive fields on the basis of said inputted interlaced video signal,

a progressive generation circuit that generates a progressive signal on the basis of the plurality of interlaced video signals generated by said interlace generation circuit, and

a pixel generation circuit that generates interpolated pixels between lines by interpolation processing using said progressive signal generated by said progressive generation circuit, and outputs an interpolation signal including pixels in said progressive signal and the interpolated pixels, and

said motion calculation circuit calculates said motion amount on the basis of said interpolation signal outputted from said pixel generation circuit.

3. (Withdrawn) The picture conversion apparatus according to claim 2, wherein said first value is a value which is not more than the spacing between lines.

4. (Withdrawn) The picture conversion apparatus according to claim 2, wherein said motion calculation circuit calculates the motion amount in the vertical direction on the basis of a value smaller than the spacing between lines.

5. (Withdrawn) The picture conversion apparatus according to claim 2, wherein said progressive generation circuit comprises

a first progressive generation circuit that generates a first progressive signal on the basis of a first combination of more than one of the plurality of interlaced video signals generated by said interlace generation circuit, and

a second progressive generation circuit that generates a second progressive signal on the basis of a second combination, which differs from said first combination, of more than one of the plurality of interlaced video signals generated by said interlace generation circuit,

said pixel generation circuit comprises

a first pixel generation circuit that generates interpolated pixels between lines by interpolation processing using said first progressive signal generated by said first progressive generation circuit to output a first interpolation signal including the pixels in said first progressive signal and the interpolated pixels, and

a second pixel generation circuit that generates interpolated pixels between lines by interpolation processing using said second progressive signal generated by said second progressive generation circuit to output a second interpolation signal including the pixels in said second progressive signal and the interpolated pixels, and

said motion calculation circuit calculates said motion amount on the basis of said first interpolation signal outputted from said first pixel generation circuit and said second interpolation signal outputted from said second pixel generation circuit.

6. (Withdrawn) The picture conversion apparatus according to claim 2, wherein said output circuit outputs said moving picture progressive signal as said progressive video signal when said motion amount is larger than a second value.

7. (Withdrawn) The picture conversion apparatus according to claim 6, wherein said output circuit synthesizes, when said motion amount is between said first value and said second value, said moving picture progressive signal and said still picture progressive signal at a ratio based on said motion amount to output the synthesized signal as said progressive video signal.

8. (Withdrawn) The picture conversion apparatus according to claim 2, wherein said output circuit sets the ratio of said still picture progressive signal to not less than 0.5 when said motion amount is not more than the spacing between lines.

9. (Withdrawn) The picture conversion apparatus according to claim 2, wherein said output circuit sets the ratio of said still picture progressive signal to not less than 0.5 when said motion amount is not more than 0.75 times the spacing between lines.

10. (Withdrawn) The picture conversion apparatus according to claim 2, wherein said output circuit sets the ratio of said still picture progressive signal to not less than 0.5 when said motion amount is not more than 0.5 times the spacing between lines.

11. (Withdrawn) The picture conversion apparatus according to claim 5, wherein

said plurality of interlaced video signals include first to fourth interlaced video signals corresponding to successive first to fourth fields,

said first combination of more than one of the plurality of interlaced video signals include said first to third interlaced video signals, and

said second combination of more than one of the plurality of interlaced video signals include said second to fourth interlaced video signals.

12. (Withdrawn) The picture conversion apparatus according to claim 2, further comprising

a judgment circuit that respectively calculates the averages of the values of object pixels and pixels peripheral thereto in the plurality of interlaced video signals corresponding to the plurality of fields, and judges whether said still picture progressive signal is adaptive or non-adaptive on the basis of said calculated averages,

said output circuit outputting the moving picture progressive signal as said progressive video signal when the result of the judgment by said judgment circuit is non-adaptive.

13. (Withdrawn) The picture conversion apparatus according to claim 12, wherein said judgment circuit respectively calculates the maximums and the minimums of the values of the object pixels and the pixels peripheral thereto in the plurality of interlaced video signals corresponding to said plurality of fields to judge whether said still picture progressive signal is adaptive or non-adaptive on the basis of said calculated averages, maximums, and minimums.

14. (Withdrawn) The picture conversion apparatus according to claim 12, wherein

said judgment circuit judges whether said still picture progressive signal to be non-adaptive when the respective differences between the calculated averages are larger than a predetermined value, and the difference between the maximum and the minimum in the same field is smaller than the predetermined value.

15. (Currently Amended) A picture conversion method in which an inputted interlaced video signal is converted into a progressive video signal, comprising the steps of:

generating interpolated pixels between lines, and outputting an interpolation signal including the interpolated pixels;

calculating motion amount information in ~~[[the]]~~ a vertical direction of a picture on ~~[[the]]~~ a basis of the outputted interpolation signal;

generating a still picture progressive signal by still picture processing from said inputted interlaced video signal;

generating a moving picture progressive signal by moving picture processing from said inputted interlaced video signal; and

outputting said outputted still picture progressive signal as said progressive video signal when said calculated motion amount is smaller than a first value, wherein generating interpolated pixels between lines comprises:

generating a plurality of interlaced video signals respectively corresponding to a plurality of successive fields on the basis of said inputted interlaced video signal;

generating a first progressive field signal based on the generated plurality of interlaced video signals; and

generating a second progressive field signal based on the plurality of interlaced video signals generated by said interlace generation circuit; and

outputting a progressive signal by changing, for each pixel, the ratio of an inter-frame interpolation signal to an intra-field interpolation signal, based on the motion amount information.

16. (Withdrawn) The picture conversion method according to claim 15, wherein said step of generating interpolated pixels includes the steps of

generating a plurality of interlaced video signals respectively corresponding to a plurality of successive fields on the basis of said inputted interlaced video signal,

generating a progressive signal on the basis of the generated plurality of interlaced video signals, and

generating interpolated pixels between lines by interpolation processing using said generated progressive signal, and outputting an interpolation signal including pixels in said progressive signal and the interpolated pixels, and

said step of calculating a motion amount includes the step of calculating said motion amount on the basis of the outputted interpolation signal.

17. (New) A picture conversion apparatus that converts an inputted interlaced video signal into a progressive video signal, comprising:

an interpolation circuit that generates interpolated pixels between lines on the basis of said inputted interlaced video signal;

a motion calculation circuit that calculates motion amount information in a vertical direction of a picture on a basis of said interpolation signal outputted from said interpolation circuit;

a still picture processing circuit that generates a still picture progressive signal by still picture processing from said inputted interlaced video signal;

a moving picture processing circuit that generates a moving picture progressive signal by moving picture processing from said inputted interlaced video signal; and

an output circuit that outputs the still picture progressive signal outputted from said still picture processing circuit as said progressive video signal when said motion amount calculated by said motion calculation circuit is smaller than a first value, said interpolation circuit comprising:

a comparison circuit that outputs motion amount information, based on a comparison of a first progressive field signal and the second progressive field signal.